

### ABSTRACT OF THE DISCLOSURE

[0063] A method of forming a titanium silicide nitride (TiSiN) layer is described. A titanium nitride (TiN) layer is deposited on a substrate, the process chamber is purged to remove reaction by-products therefrom and then the titanium nitride (TiN) layer is exposed to a silicon-containing gas to form the titanium silicide nitride (TiSiN) layer. Alternatively, the substrate may be exposed to the silicon-containing gas in a process chamber different from the one used for the titanium nitride (TiN) layer deposition.